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ART UNIT	PAPER NUMBER
2643	6

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Please find below and/or attached an Office communication concerning this application or proceeding.

		Application No.	**Applicant(s)**
Office Action Summary		09/967,062	ALLRED ET AL.
		Examiner	**Art Unit**	
		Lun-See Lao	2643	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>08 October 2003</u>.

2a)☒ This action is **FINAL.**   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
   closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-20</u> is/are pending in the application.

   4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) <u>20</u> is/are allowed.

6)☒ Claim(s) <u>1-19</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   a)☐ All b)☐ Some * c)☐ None of:

   1.☐ Certified copies of the priority documents have been received.

   2.☐ Certified copies of the priority documents have been received in Application No. _____.

   3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
       application from the International Bureau (PCT Rule 17.2(a)).

   * See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application)
    since a specific reference was included in the first sentence of the specification or in an Application Data Sheet.
    37 CFR 1.78.

   a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific
    reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .

4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: .

DETAILED ACTION

Introduction

1.   This action is response to amendment. Claims 1, 4-5, 7-8, 10-12, 14-16 have

been amended. Claims 1-20 are pending.

Claim Rejections - 35 USC § 103

2.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3.   Claims 1-9 and 14-19 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Gauthier (WO 90/09760) in view of Op de Beek (US PAT. 4,845,758).

Consider claim 1 Gauthier teaches a method for generating digital filter

coefficients for corresponding digital filters for tuning a hearing aid employing digital

audio processing to enhance hearing ability comprising:

providing first digital data (see fig.11 (target curve 118)) for a tolerance range for a

target response curve representative of said enhanced hearing ability of sound level

versus frequency;

providing second digital data (see fig.11 (loss curve 114)) representing an initial

response curve of an initial hearing ability to be enhanced of sound level versus

frequency;

comparing (see fig.10, (108)) said first digital data to said second digital data and

determining whether said initial response curve is within said tolerance range (see page

34 line 15-page 35 line 5); but Gauthier does not clearly teach that if said initial

response curve is not within said tolerance range, iteratively generating digital filter

coefficients controlling center frequency, filter bandwidth and amplitude for a succession

of digital audio filters, applying all currently generated digital audio filters to said second

digital data to generate third digital data for a compensated response curve, and

automatically optimizing the center frequency, amplitude and filter bandwidth of said

currently generated digital audio filters until said compensated response curve is within

said tolerance range or a predetermined limit on the number of digital audio filters has

been reached, whichever occurs first.

However, Op de Beek teaches inherently that if said initial response curve is not

within said tolerance range, iteratively generating digital filter coefficients controlling

center frequency (see fig. 2a), filter bandwidth (the difference between the lowest and

highest frequency and see fig.2a) and amplitude (gain and see fig.2b) for a succession

of digital audio filters, applying all currently generated digital audio filters to said second

digital data to generate third digital data for a compensated response curve, and

automatically optimizing the center frequency (see fig.2a), amplitude (gain and see

fig.2b) and filter bandwidth (the difference between the lowest and highest frequency

and see fig.2a) of said currently generated digital audio filters until said compensated

response curve is within said tolerance range or a predetermined limit on the number of

digital audio filters has been reached, whichever occurs first ((see figs. 5a-5d) and col.5 line 37-col.6 line 18).

Therefore, it would have obvious to one of ordinary skill in the art at the time the invention was made, to combine the teaching of Gauthier and Op De beek to provide the equalizer is characterized in that the central frequencies of at least those band filters whose bands are located in the low-frequency part of the frequency range are variable.

Consider claims 2-3, 5-6 Gauthier teaches a method of the step of iteratively generating digital audio filters is performed by iteratively generating second order filters (see fig.5 and page 15 line 10-15) and the initial response curve is an audiogram (see fig.11).

Consider claim 4 Gauthier teaches a method for generating a set of second order filter coefficients for corresponding digital filters to tune a hearing aid employing digital audio processing to enhance hearing ability comprising:

providing first digital data (see fig.11 (118 target curve)) for a tolerance range for a target response curve representative of said enhanced hearing ability of sound level versus frequency;

providing second digital data (see fig.11 (114 loss curve)) representative of an initial response curve of an initial hearing ability to be enhanced of sound level versus frequency;

comparing (see fig.10 (108)) said first digital data to said second digital data and determining whether said initial response curve is within said tolerance range (see page 34 line 15-page 35, line 5); but Gauthier does not clearly teach if said initial response

curve is not within said tolerance range, generating a set of digital filter coefficients controlling center frequency, filter bandwidth and amplitude for a succession of digital audio filters to tune said hearing aid by performing the following optimizing steps iteratively,

digitally processing said second digital data to determine an nth set of initial digital filter coefficients for an nth digital filter for an nth peak in said actual initial curve where said initial response curve is not within said tolerance range, including a center frequency, and an amplitude and a bandwidth for said peak, where n^{th} is the number of an iteration of said optimizing steps,

digitally generating digital filter coefficients controlling center frequency, filter bandwidth and amplitude for a compensating n^{th} digital filter from said n^{th} set of initial parameters,

applying said n^{th} digital filter to said second digital data and modifying said n^{th} set of initial parameters to determine an nth set of optimum digital filter coefficients for said compensating n^{th} digital filter, to generate third digital data for an nth interim compensated response curve of sound level versus frequency,

processing said third digital data to determine whether said n^{th} interim compensated response curve is within said tolerance range,

if said n^{th} interim compensated response curve is not within said tolerance range, performing another iteration of said optimizing steps until said interim compensated response curve is within said tolerance range or a predetermined limit on the number of digital filters has been reached, whichever occurs first.

However, Op de Beek teaches if said initial response curve is not within said

tolerance range, generating a set of digital filter coefficients controlling

center frequency (see fig. 2a), filter bandwidth (the difference between the lowest and

highest frequency and see fig.2a) and amplitude (gain and see fig.2b) for a succession

of digital audio filters to tune said hearing aid by performing the following optimizing

steps iteratively (see figs. 5a-5d) and col.5 line 37-col.6 line 18)),

digitally processing said second digital data to determine an nth (see fig.1) set of

initial digital filter coefficients for an nth digital filter (see fig.4) for an nth peak in said

actual initial curve where said initial response curve is not within said tolerance range,

including center frequency (see fig. 2a), and amplitude (gain and see fig.2b) filter and

bandwidth (the difference between the lowest and highest frequency and see fig.2a) for

said peak, where n^{th} is the number of an iteration of said optimizing steps ((see figs. 5a-

5d) and col.5 line 37-col.6 line 18),

digitally generating digital filter coefficients controlling center frequency (see fig.

2a), filter bandwidth (the difference between the lowest and highest frequency and see

fig.2a) and amplitude (gain and see fig.2b) for a compensating n^{th} digital filter from said

n^{th} set of initial parameters (see figs. 5a-5b),

applying said n^{th} digital filter to said second digital data and modifying said n^{th} set of

initial parameters to determine an nth set of optimum digital filter coefficients for said

compensating n^{th} digital filter, to generate third digital data for an nth interim

compensated response curve of sound level versus frequency ((see figs. 5a-5d) and

figs. 7-8),

processing said third digital data to determine whether said n^{th} interim compensated

response curve is within said tolerance range (see fig.2a),

if said n^{th} interim compensated response curve is not within said tolerance range,

performing another iteration of said optimizing steps until said interim compensated

response curve is within said tolerance range or a predetermined limit on the number of

digital filters has been reached, whichever occurs first inherently (see figs. 5a-5d) and

col.5 line 37-col.6 line 18)).

Therefore, it would have obvious to one of ordinary skill in the art at the time the

invention was made, to combine the teaching of Gauthier and Op De beek to provide

the equalizer is characterized in that the central frequencies of at least those band filters

whose bands are located in the low-frequency part of the frequency range are variable.

Consider claim 7 Gauthier teaches a method for generating digital filter coefficients

for corresponding digital filters for tuning a hearing aid employing digital audio

processing to enhance hearing ability comprising:

providing first digital data (see fig.11 (118 target curve)) for a tolerance range for a

target response curve representative of said enhanced hearing ability of sound level

versus frequency;

providing second digital data (see fig.11 (114 loss curve)) for an initial response curve

of said hearing ability to be enhanced of sound level versus frequency;

comparing (see fig.10 (108)) said first digital data to said second digital data and

determining whether said initial response curve is within said tolerance range; and

applying said nth digital filter to said second digital data and modifying said n^{th}

set of initial filter coefficients to determine an nth set of optimum parameters for said n^{th} digital filter, to generate third digital data for an nth interim compensated response curve of sound level versus frequency (see page 16 line 11-page 17 line 18);

if n > 1, performing the following joint filter optimizing steps iteratively and cyclically, generating fourth digital data for interim computed response curves in which for each joint filter optimizing iteration one of said n filters is absent, and then performing said single filter optimization steps utilizing said fourth digital data to generate fifth digital data for an updated interim response curve, digitally processing said fifth digital data to determine whether the most recent of said joint filter optimizing iterations has resulted in a change in said updated interim response curve greater than a predetermined amount of change, and if so continuing to perform said joint filter optimizing steps; processing said fifth digital data to determine whether said n^{th} interim compensated response curve is within said tolerance range, and if not (see page 35 line 20-page 36 line 24),

performing another iteration of the foregoing steps until said interim compensated response curve is within said tolerance range or a predetermined limit on the number of digital filters has been reached, whichever occurs first, but if so, ceasing performance of further iterations (see page 36 line 25-page 37 line 6),

but Gauthier does not clearly teach if said initial response curve is not within said tolerance range, generating a set digital filter coefficients controlling center frequency, filter bandwidth and amplitude for a succession of compensating digital audio filters by performing the following single filter optimizing steps iteratively, and digitally processing said second digital data to determine an nth set of initial

parameters for an nth peak in said initial response curve where said initial response curve is not within said tolerance range, including a center frequency, an amplitude and a bandwidth for said peak, where n is the number of an iteration of said optimizing steps, digitally generating a compensating n^{th} digital filter from said n^{th} set of initial parameters.

However, Op de Beek teach if said initial response curve is not within said tolerance range, generating a set digital filter coefficients controlling center frequency (see fig. 2a), filter bandwidth (the difference between the lowest and highest frequency and see fig.2a) and amplitude (gain and see fig.2b) for a succession of compensating digital audio filters by performing the following single filter optimizing steps iteratively, and digitally processing said second digital data to determine an nth set of initial parameters for an nth peak in said initial response curve where said initial response curve is not within said tolerance range, including center frequency (see fig. 2a), filter bandwidth (the difference between the lowest and highest frequency and see fig.2a) and amplitude (gain and see fig.2b) for said peak, where n is the number of an iteration of said optimizing steps, digitally generating a compensating n^{th} digital filter from said n^{th} set of initial parameters ((see figs. 5a-5d) and col.5 line 37-col.6 line 18).

Therefore, it would have obvious to one of ordinary skill in the art at the time the invention was made, to combine the teaching of Gauthier and Op De beek to provide the equalizer is characterized in that the central frequencies of at least those band filters whose bands are located in the low-frequency part of the frequency range are variable.

Consider claims 8-9 Gauthier teaches a method of the step of digitally generating a

compensating n^{th} digital filter is performed by digitally generating a second-order filter

(see fig.5 (516-528)); and the initial response curve is an audiogram (see fig.11).

Consider claims 12-13, Gauthier teaches the method of computer receives said first

series of signals and indication signals generated by said device to generate said first

digital date (see page 37 line 25-page 38 line 16); and first digital data is an audiogram

(see fig.11 (118)).

Consider claim 14 Gauthier teaches an apparatus for generating digital filter

coefficients for tuning a hearing aid digital audio processing for use by an individual,

comprising:

a source of first audio digital data corresponding to analog audio signals having a

selected frequency and multiple power levels; (see fig.1 (10));

Inherently, a digital to analog converter receiving (see fig.1,10 computer) said

digital data from said digital audio processing unit and converting said processed digital

data into a corresponding analog audio signal; and a speaker receiving said analog

audio signal from said digital to analog converter and producing corresponding sound to

the individual (see page 6 lines 20-29);

a device for generating indication (16,20) signals indicative of said individual

receiving said sound; and

a digital computer connected to receive said first audio digital data and said indication

signals, said digital computer programmed to determine said digital filter coefficients for

digital filters for tuning said hearing aid and provide said coefficients to said digital audio

processing unit (see page 37 line 9-23).

But Gauther does not clearly teach a digital audio processing unit in said hearing aid

for processing said first audio digital data according to at least one digital filter having

digital filter coefficients controlling filter center frequency, amplitude and filter bandwidth

and providing processed audio digital data, including applying digital audio filters for

tuning said hearing aid characterized by coefficients in algorithms applied to said first

audio digital data to effect said digital audio filters.

However, Op de Beek teaches a digital audio processing unit in said hearing aid for

processing said first audio digital data according to at least one digital filter having

digital filter coefficients controlling filter center frequency (see fig. 2a), filter bandwidth

(the difference between the lowest and highest frequency and see fig.2a) and amplitude

(gain and see fig.2b) and providing processed audio digital data, including applying

digital audio filters for tuning said hearing aid characterized by coefficients in algorithms

applied to said first audio digital data to effect said digital audio filters ((see fig.5a-5d

and col.5 line 37-col.6 line 18).

Therefore, it would have obvious to one of ordinary skill in the art at the time the

invention was made, to combine the teaching of Gauthier and Op De beek to provide

the equalizer is characterized in that the central frequencies of at least those band filters

whose bands are located in the low-frequency part of the frequency range are variable.

Consider claim 15, Gauthier teaches that an apparatus of the digital computer is

programmed to generate second digital data representative of said individual hearing

ability when using said hearing aid without filters determined from said first audio digital

data (see fig.5 (510) and page 16 line 11-page 17 line25) and said indication signals

and to determine said coefficients by

providing third digital data (see fig.11, (118 target curve)) for a tolerance range for a

target response curve of enhanced hearing of sound level versus frequency;

providing said second digital data (see fig.11 (114 loss curve)), wherein said

second digital data represents an initial response curve of hearing ability of sound level

versus frequency;

comparing (see fig.10 (108)) said third digital data to said second digital data and

determining whether said initial response curve is within said tolerance range (see page

36 line 9-col. 37 line 6).

But Gauthier teaches if said initial response curve is not within said tolerance range,

iteratively generating digital filter coefficients controlling center frequency, filter

bandwidth and amplitude for a succession of digital audio filters,

applying digital audio filters determined by said digital filter coefficients to said

second digital data to generate fourth digital data for a compensated response curve,

and automatically optimizing said digital filter coefficients by optimizing the center

frequency, amplitude and filter bandwidth of said digital audio filters until said

compensated response curve is within said tolerance range or a predetermined limit on

the number of digital audio filters has been reached, whichever occurs first.

However Op de Beek teaches if said initial response curve is not within said

tolerance range,

iteratively generating digital filter coefficients controlling center frequency (see fig.

2a), filter bandwidth (the difference between the lowest and highest frequency and see

fig.2a) and amplitude (gain and see fig.2b) for a succession of digital audio filters,

applying digital audio filters determined by said digital filter coefficients to said

second digital data to generate fourth digital data for a compensated response curve

(see figs. 5a-5d and figs.7-8), and automatically optimizing said digital filter coefficients

by optimizing the center frequency (see fig. 2a), filter bandwidth (the difference between

the lowest and highest frequency and see fig.2a) and amplitude (gain and see fig.2b) of

said digital audio filters until said compensated response curve is within said tolerance

range or a predetermined limit on the number of digital audio filters has been reached,

inherently whichever occurs first ((see figs. 5a-5d) and col.5 line 37-col.6 line 18) .

Therefore, it would have obvious to one of ordinary skill in the art at the time the

invention was made, to combine the teaching of Gauthier and Op De beek to provide

the equalizer is characterized in that the central frequencies of at least those band filters

whose bands are located in the low-frequency part of the frequency range are variable.

Consider claim 16 Gauthier teaches a method for generating digital filters for tuning

a hearing aid to enhance hearing ability, comprising:

providing first digital data (see fig.11 (118 target curve)) for a tolerance range for a target response curve representative of said enhanced hearing ability of sound level versus frequency;

providing second digital data (see fig.11 (114 loss curve)) representing an initial response curve of an initial hearing ability to be enhanced of sound level versus frequency;

comparing (see fig.10 (108)) said first digital data to said second digital data and determining whether said initial response curve is within said tolerance range (see page 34 line 15-page 35 line 5); and

applying inherently said digital audio filters to digital signals representative of received sound to generate third digital data, converting said third digital data to an analog signal and providing said analog signal to a speaker in said hearing aid,

generating fourth digital data representative of an enhanced response curve of hearing ability of sound level versus frequency;

comparing said first digital data to said fourth digital data and determining whether said enhanced response curve is within said tolerance range (see page 34 line 15-page 35 line 5).

But Gauthier does not clearly teach if said initial response curve is not within said tolerance range,

iteratively generating digital filter coefficients controlling center frequency, filter bandwidth and amplitude for a succession of digital audio filters to compensate said initial response curve,

automatically optimizing the center frequency, amplitude and filter bandwidth of said

digital audio filters until said enhanced response curve is within said tolerance range or

a predetermined limit on the number of digital audio filters has been reached, whichever

occurs first.

However, Op de Beek teaches if said initial response curve is not within said

tolerance range,

iteratively generating digital filter coefficients controlling center frequency (see fig.

2a), filter bandwidth (the difference between the lowest and highest frequency and see

fig.2a) and amplitude (gain and see fig.2b) for a succession of digital audio filters to

compensate said initial response curve (see figs. 5a-5d and figs. 7-8),

automatically optimizing the center frequency (see fig. 2a), filter bandwidth (the

difference between the lowest and highest frequency and see fig.2a) and amplitude

(gain and see fig.2b) of said digital audio filters until said enhanced response curve is

within said tolerance range or a predetermined limit on the number of digital audio filters

has been reached, whichever inherently occurs first (see figs. 5a-5d) and col.5 line 37-

col.6 line 18).

Therefore, it would have obvious to one of ordinary skill in the art at the time the

invention was made, to combine the teaching of Gauthier and Op De beek to provide

the equalizer is characterized in that the central frequencies of at least those band filters

whose bands are located in the low-frequency part of the frequency range are variable.

Consider claims 17-19 Gauthier teaches a method of the step of iteratively

generating digital audio filters is performed by iteratively generating second order filters (see page 35 line 20-page 36 line 24 (13 values is 13 digital filters); and the initial response curve is an audiogram (see fig.11 (loss curve)) and the enhanced response curve is an audiogram (see fig.11 (target curve)).

4.   Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gauthier (WO 90/09760) in view of Sjursen (US PAT. 6,292,571).

Consider claim 10, Gauthier teaches a method for generating filters for tuning a hearing aid to enhance hearing ability of an individual comprising:

fitting said hearing aid to said individual (see abstract);

connecting (see fig.1) said hearing aid (26r,l) to a source of audio digital signals;

providing said individual with a device (16,20) to generate indication signals at will (see page 38 line 5-16);

receiving said indication (16,20) signal during said generation of a signal of a selected frequency indicative of said individual hearing said selected frequency (see page 38 line 18-26);

providing a digital computer (10) connected to receive said first series of audio digital signals (see fig.5 (510)) and said indication (16,20) signals to generate digital data representative of said individual's hearing ability using said hearing aid without filters determined from said first series of digital signals (see fig.5 (510) and see page 20 line 19-30)), said computer programmed to determine said digital filter coefficients for digital

filters for tuning said hearing aid and providing said coefficients to said digital audio

processing unit in said hearing aid (see page 37 line 7-23).

But Gauthier does not clearly teach generating and providing a first series of audio

digital signals to said hearing aid, each digital signal in said first series corresponding to

an analog audio signal having a selected frequency and multiple power levels;

at said hearing aid converting each of said series of digital signals into said

corresponding analog audio signal;

providing a digital audio processing unit in said hearing aid for processing received

audio digital signals corresponding to analog audio signals and providing processed

audio digital data, including applying digital audio filters or tuning said hearing aid

characterized by generating digital filter coefficients in algorithms applied to said

received audio digital signals to effect said digital audio filters.

However, Sjursen teaches generating and providing a first series of audio digital

signals to said hearing aid, each digital signal in said first series corresponding to an

analog audio signal having a selected frequency and multiple power levels (see figs. 7-

23);

at said hearing aid converting each of said series of digital signals into said

corresponding analog audio signal (see col.4 lines 7-47);

providing a digital audio processing unit in said hearing aid for processing received

audio digital signals corresponding to analog audio signals and providing processed

audio digital data, including applying digital audio filters or tuning said hearing aid

characterized by generating digital filter coefficients in algorithms applied to said

received audio digital signals to effect said digital audio filters (see col.5 line 20-col.6

line 20).

Therefore, it would have obvious to one of ordinary skill in the art at the time the

invention was made, to combine the teaching of Gauthier and Sjursen to provide

A hearing aid using a digital filter where power consumption is minimized thus resulting

in size advantage and cost economy.

5.   Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Gauthier (WO 90/09760) as modified by Sjursen (US PAT. 6,292,571) as applied to

claim 10 above, and further in view of Op de Beek (US PAT. 4,845,758).

Consider claim 11 Gauthier teaches that a method of the digital computer is

programmed to determine said digital filter coefficients by

providing second digital data (see fig.11 (118 target curve)) for a tolerance range for

a target response curve ability of representative of said individual's enhanced hearing

ability of sound level versus frequency;

providing first digital data (see fig.11 (114 loss curve)) representative of an initial

response curve of said individual's hearing ability of sound level versus frequency;

comparing (see fig.10 (108)) said second digital data to said first digital data and

determining whether said response curve is within said tolerance range (see page 34

line 15-page 35 line 50).

But Gauthier does not clearly teach if said response curve is not within said tolerance range, iteratively generating digital filter coefficients controlling center frequency, filter bandwidth and amplitude for a succession of digital audio filters,

applying digital audio filters determined by said digital filter coefficients to said first digital data to generate third digital data for a compensated response curve, and

automatically optimizing said digital filter coefficients by optimizing the center frequency, amplitude and filter bandwidth of said digital audio filters until said compensated response curve is within said tolerance range or a predetermined limit on the number of digital audio filters has been reached, whichever occurs firs.

However, Op de Beek teaches if said response curve is not within said tolerance range, iteratively generating digital filter coefficients controlling center frequency (see fig. 2a), filter bandwidth (the difference between the lowest and highest frequency and see fig.2a) and amplitude (gain and see fig.2b) for a succession of digital audio filters,

applying digital audio filters determined by said digital filter coefficients to said first digital data to generate third digital data for a compensated response curve(see figs5a-5d and figs 7-8), and

automatically optimizing said digital filter coefficients by optimizing the center frequency (see fig. 2a), amplitude (gain and see fig.2b) and filter bandwidth (the difference between the lowest and highest frequency and see fig.2a) of said digital audio filters until said compensated response curve is within said tolerance range or a predetermined limit on the number of digital audio filters has been reached, whichever inherently occurs first (see figs 5a-5d and col.5 line 37-col.6 line 18).

Therefore, it would have obvious to one of ordinary skill in the art at the time the invention was made, to combine the teaching of Gauthier and Sjiursen into Op De beek to provide the equalizer is characterized in that the central frequencies of at least those band filters whose bands are located in the low-frequency part of the frequency range are variable.

Consider claims 12-13, Gauthier teaches the method of computer receives said first series of signals and indication signals generated by said device to generate said first digital data (see page 37 line 25-page 38 line 16); and first digital data is an audiogram (see fig.11 (118)).

Allowable Subject Matter

6.   Claim 20 is allowed.

Response to Arguments

7.   Applicant's arguments with respect to claims 1-19 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

8.   Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37

CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the date of this final action.

9.   The prior art made of record and not relied upon is considered to applicant's

disclosure.

10.   Any response to this action should be mailed to:

        Commissioner of Patents and Trademarks

        Washington, D.C. 20231

        or faxed to:(703) 872-9306

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington.

VA., Sixth Floor (Receptionist).

Any inquiry concerning this communication or earlier communications from the examiner

should be directed to Lao, Lun-See whose telephone number is (703) 305-2259 The examiner

can normally be reached on Monday-Friday from 8:00 to 6:30. If attempts to reach the

examiner by telephone are unsuccessful, the examiner's supervisor, Curtis Kuntz, can be

reached on (703) 305-4708.

Any inquiry of a general nature or relating to the status of this application or

proceeding should be directed to the Technology Center 2600 whose telephone

number is (703) 306-0377.

Lao, Lun-See
Patent Examiner
US Patent and Trademark Office
Crystal Park 2
(703305-2259

DUC NGUYEN
PRIMARY EXAMINER